AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraphs beginning at page 1, line 4, as follows:

FIELD ~~OF INVENTION~~

The ~~invention~~ present disclosure concerns mobile communication combining both public mobile access networks and unlicensed access networks. The ~~invention~~ disclosure has specific relevance to the transfer of connections between public mobile networks and unlicensed-radio access networks.

Please amend the paragraph beginning at page 2, line 28, as follows:

Recently proposals have been made to extend conventional cellular networks by including access networks that utilise a low power unlicensed-radio interface to communicate with mobile stations. The access networks are designed to be used together with the core elements of a standard public mobile network. The access network is constructed so that the core elements, such as the mobile switching centers MSC, of the public mobile network views the unlicensed-radio access network as a conventional base station controller BSC. Such an access network and the mobile station for use with this access network is described in European patent application No. EP-A-1 207 708. The content of this application is incorporated herein by reference. The low power and resultant low range of the unlicensed-radio interface means that several such access networks may be provided in relatively close proximity, for

example one access network per floor of an office building. The access network preferably also includes a fixed broadband network which connects to a mobile services switching centre (MSC) of a conventional GSM public mobile network. This greatly facilitates the installation of the access network, permitting a subscriber to install the access network in his own home himself, for example. Suitable unlicensed-radio formats include digital enhanced cordless telecommunications (DECT), wireless LAN and Bluetooth. An adapted mobile handset capable of operating over both the standard air interface (e.g. the Um interface) and the unlicensed-radio interface means that the subscriber requires only one phone for all environments.

Please amend the paragraphs beginning at page 4, lines 10-16, as follows:

SUMMARY ~~OF THE INVENTION~~

It is thus an object ~~of the present invention~~ to propose a system of handling handover from a conventional public licensed mobile network, such as GSM, UTMS or CDMA2000 to an unlicensed-radio access network connected to the conventional network.

~~This~~ In a non-limiting aspect, this object is achieved in an access network, a telecommunications network containing this access network and a method of handover in accordance with the present invention. Specifically the access network is adapted to communicate with a mobile terminal and a core

network portion of a mobile telecommunications network, and comprises a plurality of local base stations each defining a mini-cell and adapted to communicate with mobile terminals located in a respective mini-cell over an unlicensed-radio interface; an access network controller adapted to communicate with the core network portion over a predetermined licensed mobile network interface and connected with the plurality of local base stations. Handover between a cell of the telecommunications network and the access network is facilitated by assigning a single common identifier associated with the access network controller to all the mini-cells. In this manner, the whole unlicensed-radio access network is identified by the same identifier in the remaining network. Handover to any mini-cell of the unlicensed-radio access network leads to the access network controller. The communication of this single identifier to the remaining network is thus relatively simple and quick.

Please amend the paragraph beginning at page 5, line 23, as follows:

The method in accordance with ~~the present invention~~ a non-limiting aspect resides essentially in the following steps: allocating a common identifier to all local base stations connected to the access network controller, each local base station communicating at least a part of the common identifier to a mobile station located within the associated mini-cell via the unlicensed-radio interface, the access network controller responding to a handover request

message received from the core network portion by generating a handover reference and transmitting the handover reference as a handover acknowledgment message to the core network portion, the local base station receiving the handover reference from the mobile station and transmitting the handover reference to the access network controller across the fixed broadband network, the radio access controller setting up a communication path over the fixed broadband network with the local base station in response to the received handover reference.

Please amend the paragraph beginning at page 6, line 22, as follows:

Further objects and advantages ~~of the present invention~~ will become apparent from the following description of the preferred embodiments that are given by way of example with reference to the accompanying drawings. In the figures:

Please amend the heading beginning at page 7, line 6, as follows:

DETAILED DESCRIPTION ~~OF THE DRAWINGS~~

Please amend the paragraph beginning at page 7, line 22, as follows:

The access portion ~~essentially consists of~~ includes base station subsystems BSS 10, one of which is illustrated in FIG. 1, which communicate via defined fixed standard A and Gb interfaces with MSCs 202 and SGSNs 203,

respectively in the core network portion 20. Each base station subsystem BSS 10 includes a base station controller BSC 103 which communicates with one or more base transceiver stations BTS 101 via the defined A_{bis} air interface 102. The base transceiver stations 101 communicate with mobile terminals MT 1 over the GSM standard U_m radio air interface. It will be understood that while the BTS 101 and BSC 103 are depicted as forming a single entity in the BSS 10, the BSC 103 is often separate from the BTSs 101 and may even be located at the mobile services switching centre MSC 202. The physical division depicted in FIG. 1 serves to distinguish between the parts of the network making up the access network portion 10 and those that form the core network portion 20.

Please amend the paragraph beginning at page 9, line 5, as follows:

The element of the ~~fixed~~ unlicensed-radio access network portion 30 adapted to communicate across the Bluetooth interface is designated a local or home base station (HBS) 301. This element handles the radio link protocols with the mobile terminal MT 1 and contains radio transceivers that define a cell in a similar manner to the operation of a conventional GSM base station transceiver BTS ~~103~~ 101. The home base station HBS 301 is controlled by a home base station controller HBSC 303, which communicates with a mobile service switching centre MSC 202 over the GSM standard A interface and also with a serving GPRS support node SGSN 203 over a standard Gb interface, if

available in the core network portion. The interface between the home base station HBS 301 and its home base station controller HBSC 303 is designated a Y-interface. The home base station controller HBSC 303 provides the connection between the MSC 202 or SGSN 203 and mobile terminal 1. The joint function of the home base station HBS 301 and the home base station controller HBSC 303 emulates the operation of the BSS 10 towards the SGSN 203 and MSC 202. In other words, when viewed from the elements of the core network 20 such as the mobile service switching centre (MSC) 202 and the serving GPRS support node (SGSN) 203, the ~~fixed~~ unlicensed-radio access network portion 30 constituted by the home base stations HBS 301 and the home base station controller HBSC 303 looks like a conventional access network portion 10.

Please amend the paragraph beginning at page 9, line 30, as follows:

The interface between the home base station HBS 301 and the home base station controller HBSC 303 which is designated Y in FIG. 1 is preferably provided by a fixed link. The home base station 301 is intended to be a small device that a subscriber can purchase and install in a desired location such as the home or an office environment to obtain a fixed access to the mobile network. However, they could also be installed by operators in traffic hotspots. In order to reduce the installation costs on the part of the operator, the interface between the home base station 301 and the home base station

controller 303, which is designated interface Y in FIG. 1 therefore preferably exploits an already existing connection provided by a fixed network 302. Preferably this network is a broadband packet network. Suitable networks might include those based on ADSL, Ethernet, LMDS, or the like. Home connections to such networks are increasingly available to subscribers. Although not shown in FIG. 1, the home base station HBS 301 will be connected to a network terminal giving access to the fixed network 302, while the home base station controller HBSC 303 may be connected to an edge router ER of the network 302 that also links the fixed network 302 to other networks such as intranets and the internet. IP ~~is~~ can be used for communication between the home base station HBS 301 and home base station controller HBSC 303 over the fixed network 302 to render the transport of data independent of the network type. The link between the home base station HBS 301 and the home base station controller HBSC 303 is preferably always open, so that this connection is always available without the need for reserving a channel. While the fixed network 302 is preferably an IP-based network, ATM-based networks could also be used. In particular when DSL technologies are used in this network, they could be used directly on top of the ATM layer, since they are based on ATM. Naturally, an ATM based network could also be used to transport IP, serving as a base layer.

Please amend the paragraphs beginning at page 11, lines 8-18, as follows:

The base stations 101 and 301 in both the conventional access network 10 portion and the unlicensed-radio access network portion 30 define a coverage area depicted in FIG. 1 by hexagonal cells 104, 304. While the relative dimensions of these cells are not necessarily accurate in the figure, it is nevertheless clear that the coverage of a conventional BTS 101 is far greater than the comparatively low power HBS 301. For this reason, and because an HBS 301 can be installed wherever there is a port to the fixed broadband network connected to an HBSC 303, one or more mini-cells 304 generated by HBS's 301 may be located inside the cell 104 of a conventional BTS 101.

In a conventional GSM network, handover of calls between adjacent cells is enabled by informing the currently connected access network 10 and the core network portion 20 of the identification of neighbouring cells by means of a cell global identifier CGI, which contains the mobile country code, mobile network code and a location area code, and also information about which BSC 103 and MSC 202 (or SGSN 203, if available in the network) controls these cells. The BSC 103 must be able to communicate the absolute radio frequency channel numbers (ARFCN) allocated to all neighbouring cells to a mobile terminal 1 connected to it so that the mobile terminal 1 can measure the associated frequencies and report back the strongest frequencies. In addition to the channel number ARFCN, this message also includes a base station identity

code BSIC that is unique in the area to the base station transmitting on the identified channel frequency. With the introduction of a large number of mini-cells 304 resulting from the installation of an unlicensed-radio access network 30 this kind of operation and maintenance activity becomes very complex and cumbersome, particularly as the location of the mini-cells may change over time. FIG. 2 illustrates how this installation activity is greatly reduced and facilitated in accordance with one or more non-limiting aspects of the present invention.

Please amend the paragraph beginning at page 12, line 25, as follows:

However, for the purposes of identifying the mini-cells 304 to enable handover, rather than allocating a unique cell identifier, base station identifier and frequency channel number to each mini-cell 304, all mini-cells 304 in the same unlicensed-radio access network are identified to the GSM network by the same identification. In effect, the whole unlicensed-radio access network 30 or rather the home base station controller HBSC ~~203~~ 303 controlling this access network is assigned a single cell identification. This identification is then distributed in the network by manual operation and maintenance procedures on installation so that the core network portion and the relevant base station subsystems BSS 10 controlling cells neighbouring one or more mini-cells can access this identification. The cell identification is equivalent to the cell global identifier CGI used in a conventional GSM network and also

includes a unique, single Location Area assigned to the access network 30. This is illustrated schematically in FIG. 2 by the assignment to the home base station controller ~~203~~ 303 of a cell identifier CGI-A.

Please amend the paragraph beginning at page 14, line 18, as follows:

In FIG. 3 the various elements involved in the signalling are shown at the top of the drawing. The mobile station MS is indicated twice on either side of the figure. The left hand mobile station MS Um represents the standard GSM Um interface and the right-hand mobile station MS X represents the unlicensed radio interface, or X-interface, of the same mobile station. Referring now to event 1 of FIG. 3, it is assumed that a GSM call has been set up between a mobile station MS and a base station subsystem BSS via the standard Um interface. At event 2, the base station subsystem BSS transmits system information to the mobile station Ms including the list of frequencies the mobile station MS should measure for handover purposes. This measurement list includes the absolute radio frequency channel number ARFCN assigned to the unlicensed-radio access network. A measurement report on the frequencies listed is sent from the mobile station MS to the base station subsystem BSS at event 3. At event 4 it is assumed that the mobile station has wandered into the coverage area or mini-cell of a home base station HBS of an unlicensed radio access network. The mobile station sets up a radio link with the HBS via the unlicensed radio interface X. The mobile station MS

is then able to receive system information from the home base station HBS including the base station identifier code BSIC and the absolute radio frequency channel number ARFCN at event 5. The BSIC and ARFCN values are then included in the next measurement report sent to the base station subsystem BSS at event 6. At event 7 the base station subsystem determines that the channel number associated with the unlicensed radio access network is reported to have the strongest signal in the measurement report and consequently triggers handover by sending a HANDOVER-REQUIRED message (GSM 08.08) to the mobile services switching center MCS. Included in this message is the cell identifier CGI that identifies the home base station controller HBSC controlling the unlicensed radio access network concerned. At event 8, the mobile services switching center MSC sends the ~~uses the~~ HANDOVER-REQUIRED message to the home base station controller HBSC. In addition to the cell identifier (CGI), this message now also includes a circuit identification code (CIC) that will be used in the A-interface if handover is successful. On receipt of this message, the home base station controller HBSC reserves the necessary local resources and assigns a handover reference number (HO reference) to this handover. It should be noted that the home base station controller HBSC does not know at this stage which home base station HBS and associated mini-cell this handover request concerns. At event 9 a the home base station controller HBSC creates the required HANDOVER COMMAND message concerning the radio resource layer (RR) containing the

handover reference number (HO reference). This HANDOVER COMMAND message is then included in a handover acknowledgement message (HANDOVER-REQUEST-ACK) sent to the mobile services switching center MSC. The acknowledgement message is then sent to the base station subsystem BSS at event 10 and the HANDOVER COMMAND message transmitted to the mobile station MS at event 11.